THE

HOME FRIEND;

A WEEKLY MISCELLANY OF AMUSEMENT AND INSTRUCTION.

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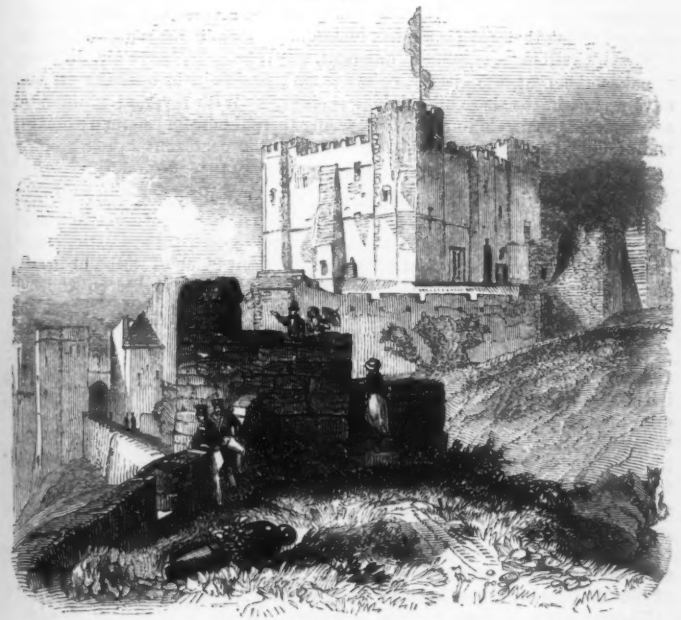
DOVER CASTLE.



IT is impossible to visit Dover, without seeing, either from afar or near, the venerable fortress which stands on one of its heights. Reared on an almost perpendicular precipice, upwards of 320 feet from the sea, that old Castle with the sun shining on its broken towers and massive walls, on its dark green ivy, and richly verdant slopes is, irrespectively of its historic associations, a deeply interesting and highly picturesque object. And when we ascend the steep hill to survey the ruins more closely, Nature and Art

have each their wonders to offer to our admiration. Stretching far away in the distance is the blue broad sea, glittering as it dashes upon the stony beach, and making a low murmur which falls faintly on the ear from below. The North Foreland with its guardian lighthouse; the long line of Ramsgate Pier; the Isle of Thanet; the Church of Reculver; on which the sea has advanced during the course of years, and threatens in coming days to advance still farther, all may, on a clear day, be seen from the Castle hill. Thence, too, we may behold the old town of Sandwich, tracing some dim shadows of the houses which stand among its Time-worn and grass-grown streets; while, on the opposite shore, the light shines on white cliffs, so like those on our own coast, as at once to suggest the thought that they must have been riven asunder from them; while the grassy summits seem to form a greensward which reaches along all the way from Boulogne to Gravelines.

As we enter more immediately the precincts of the Castle and follow the guide into the silence of its deserted towers and among its outer and inner fortifications, memory and imagination are awakened. The past is with us then, and men of bygone ages have left there the records of their character and history. An hour occupied in considering some of the changes which that old Castle has undergone, since it was regarded as the "Key of the Kingdom," is not misspent. "Whatever," says Dr. Johnson, "makes the past, the distant, or the future, predominate over the present, advances us in the stage of thinking beings." With reverent attitude we may wait on the revelations of Time, seeing there the history of man's doings, and of God's providence, and believing, with the poet, that

"The Past holds in its arms the Present and the Future."

Without entering minutely into the details of every tower and gate and massy wall, we may, even by looking up from the beach, or from almost any of the streets of the town, see the large square part of the Castle, called the Keep, with its strong walls and turrets, and long line of wall and towers and gateway. We can, from either of these places, also discern the old Pharos, Watch-tower, or Lighthouse, and the ruins of the church, which, though its date is uncertain, is assuredly one of the oldest in the kingdom: as doubtless that octagonal Pharos, now but a ruin, is one of the most ancient pieces of masonry, if not the very first, which was reared on this island. The Romans built it of a stalactical concretion, instead of stone, mingling among this the well-known Roman-tiles. The walls are very thick, and are now about forty feet in height, but it is impossible to tell how high they once were, ere Time had crumbled them, and stained them with the grey lichens, which are mixed with the mosses and wild-flowers, which grow among their crevices. These sturdy walls have resisted, not alone the winds and frosts of long ages, but have even withstood the shock of an earthquake, which in April 1580 extended along the whole line of the cliffs, hurling down vast masses of chalk, and breaking away some portions of the Castle which were built near the edge.

The sea has long since receded from the base of the cliff, though when Julius Cæsar first made his descent upon our island, this cliff was washed by the high tide. The chronicles of the monks tell us that the first part of Dover Castle was built by this monarch, 55 years before the Christian era, but pretty good proof exists that this was not the case. The architecture of this remarkable ruin shows that different portions were constructed at different intervals of time, and the portion which is evidently the most ancient, has been suffered to moulder into ruin. The site would doubtless

be regarded in earliest times as a suitable one on which to build a tower of defence from a foreign enemy, and it is not improbable that the ancient Britons might have had some stronghold on the spot, even before the invasion of the Romans.

THE PHAROS.

The first account on which we can rely of any Roman masonry in this kingdom is, during the lieutenancy of Aulus Plautius, and Ostorius Scapula, the latter of whom left Britain A. D. 53. It was, in all probability, a few years before this date, that the Roman works on the Castle were commenced, the plan of the ground, as well as the nature of the oldest part of the ruin, plainly indicating that the architect was a Roman. This was in all likelihood the time when the Pharos was constructed. The Romans, as we know from their poets and other ancient writers, believed that the portion of the sea which washes our shores, was highly dangerous to the mariners. "Swallowing sands, rough shores and a deceiving tide," were believed to be characteristic of Britain; and Horace describes our channel as—

"The monster-bearing sea which roars
About the dangerous British shores;"

while Juvenal speaks of the "hugeness of the British whale" as far exceeding that of the dolphin of his own sea.

As it became requisite for the Romans to cross the sea more frequently, a lighthouse was the more necessary; and they erected both this Pharos

and another on the heights on the opposite side of the haven, the last remains of which were destroyed in constructing the redoubt on its site in 1805. A third, placed on the opposite shore of Boulogne, is said to have been built by Caligula, in commemoration of his act of gathering shells, and returning in triumph to the Imperial City. This building fell with a great crash into the sea in 1644.

The foundation of the Pharos at the Castle, is like those of all the Roman buildings, in a bed of clay. In outward form the structure is an octagon, and the interior is a square, the sides of which are each about 14 feet.

Even more interesting from its associations with the past are the remains of the old church, telling as they do of the time when a purer faith began to supplant the superstitions of paganism. Amid the darkness of an age in which the Holy Scriptures could be read by so few, when as yet their influences had told so little on the minds of the people, there were even then, doubtless, many whose hearts ascended to God in faith and prayer, and who lived devout and pious lives.

If, as we walk amid the ruins of our old castles and abbeys, we see dungeons so dark and unwholesome that we feel as if the hearts of the men who built them were as hard as the stones of their walls, yet again when we look on the structures raised for worship, we feel assured, that here some lived and died in humble faith, and went up hence to the clearer light of heaven.

The thick walls of the old church still remain to tell of its ancient strength, and prove either that the architect was a Roman, or that they were built of the materials of some older structure, left by the Romans on their final removal from our island. The blue sky is over their roofless walls—

"The buttercups are lifting up their heads
Upon the floor of the confessional,
Where came the worshipper with counted beads,
Upon his knees in penitence to fall;
Where came the great to listen unto all;
And scoff or pray, as good or ill was he:
Could words come forth from that time-stricken wall,
Some wondrous tales retold again would be;
The maiden's simple love—the feat of villany."

The church is in the form of a cross, having a quadrangular tower on the east side. Darell, who wrote his account of Dover Castle in the reign of Queen Elizabeth, says that this had been adorned with the arms of Lucius, but that even in his time, they had been effaced by wind and weather. The chronicles of the monks relate that the church was built by Lucius, who, in A.D. 180, was appointed king of the eastern parts of Kent by the Emperor Aurelius. He was converted to Christianity, and appears to have been a zealous friend to religion, while he won the love of his subjects by his wisdom and virtue. Michael Drayton in his "Poly-Olbion," thus refers to him:—

"Great Lucius that good king; to whom we chiefly owe
This happiness we have, Christ crucify'd to know:
As Britain to her praise received the Christian faith,
After that Word-made man our dear Redeemer's death
Within two hundred years."

This prince, anxious to understand fully the religion which he professed, wrote to Eleutherius, then Bishop of Rome, for instructions, and a copy of one of the letters of the Bishop is to be seen in Fox's Acts and Monuments.

Lucius cleared the idols from the Pagan temples, consecrated them to the Christian worship, and also built some churches. Whether, as old records tell, the church near Dover Castle was raised by him, or whether, as some writers suppose, it was built some centuries after, by the masons who followed Augustine into Britain, cannot now be ascertained, but there is no evidence to prove that Lucius was not its founder.

Some years of darkness and gloom followed this period of Britain's history. Persecution, and even martyrdom were common in our island, until A.D. 306, when Constantine the Great made Christianity the religion of the Roman Empire. After his death came a farther period of gloom and wickedness, and the Saxons brought idolatry, with the fire and the sword, till A.D. 596, when Augustine visited our land. From this period we have authentic accounts of this church, as Augustine dedicated it to the Virgin, and performed masses within its walls. If the account of its origin under Lucius be correct, we may also believe the chronicles of the monks, which state that 400 years before this period, the church had been dedicated to Christ. It is not improbable that Augustine might be ignorant of this fact.

In this old church for many centuries after, masses were daily said, and sung, and prayers were offered for the living and the dead, and for the recovery of the Holy Land from the infidel. Here the font, the eucharist, and the anointing oil were duly guarded; and here, even as late as the reign of Queen Elizabeth, were vestiges of an altar, while daily service was performed until the year 1690. In 1711, a chalice and paten which had belonged to the communion service of this ancient church, were given to the church in St. James's Parish, Dover, and the sacrament is performed with these ancient relics even at the present day.

A college which was founded by Edbald, son of Ethelbert, near a part of the Castle buildings, called Colton's Gate, with 26 canons and a provost, had also been removed into the town in 700, when the church of St. Martin, now a ruin, was completed; and eighty-two years earlier, a costly monument which had been reared to the memory of Henry Howard, Earl of Northampton, was, on account of the ruinous condition of the building, taken to a chapel at Greenwich. A sumptuous monument also once adorned this church, which had been built in memory of Sir Robert Ashton, Knt., Treasurer of England, and Constable of the Castle, who was buried there in 1381; but all the glory of the stately building has departed.

> "Where are the ceaseless and unnoted feet,
> That wore a pavement path with kneeling prayers?
> Where is the coffin? where the winding-sheet?
> And monuments which nobles had for theirs,
> When death drew nigh and closed life's long account of cares?"

Whether the Roman works in the Castle are all comprehended (as one of its historians, Mr. Lyon, believes) within the fosse and parapet which surrounds the church and lighthouse—or whether, as Darell contends, the Prætorium of the Romans occupied the site of the present Keep—is difficult to determine, but most of the superstructures appear to be of Saxon origin.

The principal building, the Keep, was so called because it was built in the centre of the quadrangle which the Saxons termed the Keep—and which was their point of greatest security. This large and massy square building has its four angles placed in a direct line with the four points of the compass, and its foundations are generally twenty-four feet, and in some places much more in thickness, and notwithstanding various alterations

made at different periods in the building, it bears undoubted evidence of its antiquity. According to an ancient chronicle its foundation was laid about the year 1153. Some few rooms and passages, separated by thick walls, and these enclosed in some which are still more massy, show that, in the erection of this part of the building, strength to resist, rather than elegance and comfort, was the desired object.

The ground-floor buildings had, in more ancient times, no mode of entrance, and communicated with the story above by means of circular stone stairs in the north and south angles; but there are now two or three modern entrances to this part of the Castle. A large room, containing two thick pillars and three arches, appears to have been a depository for stores, and to have received only such dim glimpses of daylight as could reach it from four loopholes. A gallery, fifty-four feet long and twelve feet wide, in the south-western wall, was also lighted by two loopholes.

A singular mode of construction characterised the loopholes of the square room, reminding us of their warlike intent and of the mode of warfare of our ancestors. The opening within was very high, and about eight feet wide. The lower part tended upwards in a flight of steps, narrowing gradually, while a circular arch was raised over them to the summit. Here a body of archers might safely discharge their weapons on an enemy in the square below, for taking aim from the top of the steps, their foes could neither see the hand which discharged the shaft, nor send it back with any hope of aim; for were this attempted the weapon would fall powerlessly upon the arch. In the eastern angles were two of those drear dungeons which we find in old castles, standing monuments of cruelty and implacable revenge, and too often enclosing instruments of torture, at which Englishmen of modern days would shudder. Here the innocent or the guilty may have perished in gloom and famine in a living grave.

The ancient entrance to the Castle Keep was by means of a flight of steps, which in those days led to a noble vestibule, about fourteen feet above the quadrangle, and which extends a considerable distance to the right of the entrance. On the right of this vestibule is the Guard Room, and opposite to it is the Royal Chapel, still preserving its old Saxon arches. As we wander amid the silent gloom of this ancient chapel, the thoughts revert to times when monarchs and soldiers and long trains of priests came hither to offer their devotions, and when the loud anthem rose in the air amid the screams of the sea-gulls, and the sound of the waves which dashed against the cliffs:—

> "And though the hypocrite hath shuffled here,
> Here, too, from earnest lips did often glide
> The words of men mistaken but sincere."

From the vestibule was an entrance to the second or highest story of the building, in which were the Royal apartments, and at the top of the stairs, ascending to the Court-yard, were the well-fortified gates leading to the vestibule. Another pair of well-defended gates opened on a space where was a flight of steps on the north-east side of the building, leading to the state-rooms, and farther up were other gates defended by a portcullis; while on the landing places on each side of the stairs were concealed galleries for archers and spearmen, who being hidden from the enemy, must have had power to harass and destroy them with impunity. Most of the secret recesses have been destroyed in the course of modern alterations, but enough remains to show how well suited they were to the design for which they were constructed.

At the summit of the stairs at the left of the entrance of the Royal apartments, and in the thickness of the wall, is the celebrated well which the chroniclers of Dover Castle tell us the Duke of Normandy required Harold to deliver up to him on the death of King Edward. Some French prisoners, who, during the reign of Queen Anne, were confined in the Castle, filled it nearly up with rubbish, and it is now arched over, lest an unwary footstep should betray the passer by to sudden death. An aperture is left at the summit of the arch, and a plummet let down through this, descends to the depth of 293 feet, whereas the former depth must have been about 400 feet to the water.

In 1800, bomb-proof arches were constructed over this massy Keep, and cannons were mounted on its turreted walls.

The Saxons surrounded their fortifications with a strong wall where the green ivy and the yellow clumps of wall-flowers now luxuriate in wild beauty. Towers, gates, and bridges were placed at irregular distances, and the Normans in the time of William the Conqueror, repaired the breaches in this wall which time or warfare had made, and appear to have built some portion of that which now remains. Godwin's Tower, and the Colton Gate, with several towers which are now destroyed, were built by the Saxons; as was also Suffolk's Tower, which Edward IV. converted into a magnificent mansion for his brother-in-law the Duke of Suffolk. The King's Gate, now but a ruined outwork, was also one of their strong fortifications, while King Arthur's Gate, and some smaller towers, as well as that apartment called Arthur's Lesser Hall, were also built by the Saxons. Their favourite hero King Arthur, is supposed to have held his court in Dover Castle. Camden says that he had read from a note table hung on the walls of the Castle, that King Arthur and his knights vanquished some rebels here; and some of our good antiquaries consider these surmises probable as these buildings preserve his memory in their names. Arthur's Lesser Hall is also called by the name of Arthur's Queen, Guenever's Chamber.

Some of the Norman fortifications are still in a good state of preservation, though nothing but the ruins of a gateway under the cliff remains to tell of the old gate, with tower and drawbridge, which was known once by the name of Monks' Gate, perhaps because the canons or secular priests resided there. The New Entrance, as it is called, was constructed in 1797, to the north-westward of Monks' Gate, and has a drawbridge and various other defences.

Two towers in the wall, on a line with the edge of the cliff, are very conspicuous features in the building. These are Rokesley's and Fulbert de Dovre's towers. Farther on are some smaller towers, and beyond them in an angle of the Saxon wall is the stately building called Peverell, Beauchamp, or Marshall's Tower, which, during the last century, was commonly termed the Bell Tower. This was well planned for defence, having several rooms for soldiers, and an embattled platform for the bowmen, whence they had a command of the whole of the hill between the Castle and the town. A noble-arched gateway, a ditch, and a drawbridge, also belonged to the tower. The ditch is now filled up, and the piers of the bridge before the arched gateway were brought to light in 1771, when digging for a foundation for a new wall, the old one having at that time fallen into the ditch.

Queen Mary's Tower, which was repaired by this Queen, Fienes, Newgate, or Constable's Tower, raised on the site of one more ancient, and several other Norman towers, are yet memorials of the old grandeur of

our noble Castle. This Constable's Tower was a magnificent stronghold, with gate and bridge, and portcullis, and subterranean passages, built with skill and strength; though their old rooms must, from the deficiency of light, have been drear and gloomy, till modern improvements admitted the sunshine and free ventilation there, and fitted the apartments for the occasional residence of the Lieutenant-Governor of the Castle and the visits of princes and nobles.

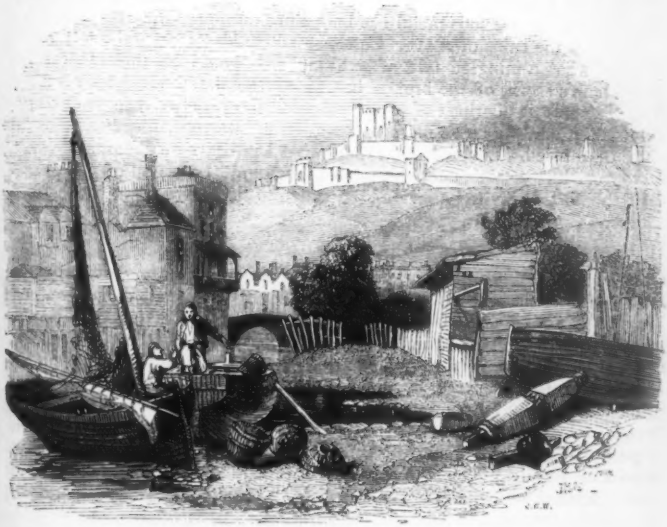
As might be supposed, from the warlike times in which the Norman fortifications were built, many of them are remarkable for the ingenuity and strength of their means of defence. Some of these were raised by William the Conqueror, but some of the most important were constructed by Hubert de Burgh, who served his king, the weak and tyrannical John, with the utmost bravery and loyalty, and with an integrity which has left to all times a noble record. At the period when the greater number of the barons withstood the power of the king, and while Louis the Dauphin of France was making preparations to invade England, and had brought a fleet of 680 ships to Stonar, in the Isle of Thanet, Hubert de Burgh was the governor of Dover Castle. All Kent, even the brave Kent, whose motto "Invicta" has been well sustained by Kentish men, yet now wearied with the folly and tyranny of their sovereign, succumbed to the French king, only Dover Castle still resisting his army. The Castle was in a state of siege when John died, and the Dauphin sent to Hubert de Burgh, inviting him to capitulate, and urging, among other reasons for doing so, that the Sovereign to whom he owed allegiance was now no more, and that he might now swear obedience to a prince whom his countrymen had acknowledged king. But Hubert with true patriotic spirit, refused to give up the Castle to a foreign enemy, and all threats and persuasions proving ineffectual, the Dauphin withdrew.

Among the numerous improvements made by this spirited governor, were several towers, as Fitzwilliam's Tower, which had a massive gate hung on large pivots in stone sockets, and fastened with bars in the wall. This gate could be drawn up, and if suddenly let down against the stone abutments of the building, its weight and velocity would have driven back even a large army. This tower is now fortified according to the modern plans of military defences. Albrinci's Tower, another fortification of this period, with its loopholes, platform, and galleries, and the contrivances in its walls for pouring down hot sand, scalding water, or melted lead on the heads of the enemy, is another memorial of the terrible works of warfare.

During a long period of years, Fulbert de Dovre's Tower has been converted into a prison for offenders against the revenue laws and for debtors. With that carelessness for human life which belongs to a less enlightened age and people, this prison was not only rendered wretched to its inmates, by want of space and air, but there was actually no fund to supply them with food. Here, doubtless, many a one has died a lingering death caused by that "hope deferred which maketh the heart sick," or slowly pined with hunger. It is melancholy to think that in the time of some old persons now living in Dover, people confined in this prison have, by letters or other means, appealed to strangers for bread to keep them from starving, and some have been known to die of want; for until the year 1796 no provision was allowed. Since that period several improvements have been made in the prison itself, and a small fund is given for the prisoners. Even now as the passenger walks up the military road, his attention is

arrested by the sound of a bell, and looking towards the grating on the side of the tower, he reads an appeal to the passer-by to remember the poor debtors.

Those who do not mind the chill and darkness should follow the guide down into what are called the underground works. Many of these were constructed during the expectation of the French invasion in 1798, and extensive barracks were also excavated in the solid rock which are capable of accommodating a garrison of three or four thousand men; while shafts, and souterrains, and other modes of resistance serve to give to those little acquainted with military defences, some idea of the use of a castellated fortress during a season of warfare.



THE CASTLE AS SEEN FROM THE PENT.

But we must quit the old Castle, though we would fain tell of the celebrated men, who from the earliest ages have commanded it. We would linger over the chronicles which relate how Hengist took possession of the fortress, and conferred its command on his brother Horsa; how Edbald, son of Ethelbert, founded the college near Colton's gate; of the wicked Earl Godwin and of his son Harold, who in turns governed it. We recal the days when William the Conqueror was at length victorious over the brave governor the Baron of Ashburnham, and stayed eight days at Dover Castle, putting to death the baron and his sons for a patriotism which in modern days, the hardest heart would respect. Many a noble besides Hubert de Burgh has been governor of the Castle: among these were Lord Cobham, and Sir Simon de Mountford; and many a prince has visited it in times of peace. Here Henry VIII. spent some days with Anne Boleyn. Here Charles I. met Henrietta of France, when, an old manuscript describes her as "nimble and quick, black-eyed, brown-haired, and in a word a brave lady." Here, too, in later days, amid the sad vicissitudes of fortune, the king, the queen, and the princess Mary, were again at Dover Castle, in sorrow and almost alone; while the sounding of the surges which before

seemed the glad response to their bounding hopes, must have seemed now like the dirge of their fallen greatness.

Besides the attacks made by foreigners on this fortress, Dover Castle was wrested from the king in the commencement of the civil war between Charles and his Parliament; and the Loyalist army sent to besiege it were obliged to leave behind their stores and artillery, and retreat before the opposite party.

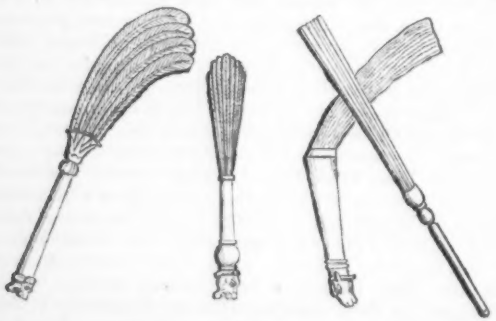
The visitor while walking around the outworks will see the handsome piece of brass ordnance, commonly called Queen Elizabeth's Pocket-Pistol, which was presented to that sovereign by the States of Holland, as a mark of gratitude for the aid which she had given them against Spain. It is twenty-four feet long, and its touch-hole was formerly adorned with a ring of gold, but the precious metal has long since disappeared.

Such are the ruins of Dover Castle; and could its old walls tell of its records, what a mingled tale of weal and woe would be theirs! Of the proud man's scorn, of the broken heart; of the dread cruelties of fierce war, of the slow sufferings of pining sorrow. Long may the surges and the wild winds, and the lark's morning song, be uninterrupted by less peaceful notes of music! Long may the flag "that has braved a thousand years" wave from its parapets over the town below, and the sound of the peaceful Sabbath bell invite its martial multitude to the Sabbath prayer.

NINEVEH.—THE COURT (*continued*).

One of the Ninevite alabasters in the British Museum represents the monarch returning to his palace after the enjoyment of the chase, and gives us some insight into the etiquette of the court. Having reached the palace, the king alighted from his chariot, and was met by the high officers of the royal household. First came the cup-bearer, who presented his master with the prepared beverage, probably weak and sweet wine, or a drink analogous to the *sherbét* of the present day, a sort of lemonade, flavoured with the juices of other fruits. How delicious such a draught is, those well know who have felt the sultriness of a tropical climate; and those will readily understand why, to one coming in from the arduous chase, parched with the heat and exercise, the cooling beverage should be *the first* requirement.

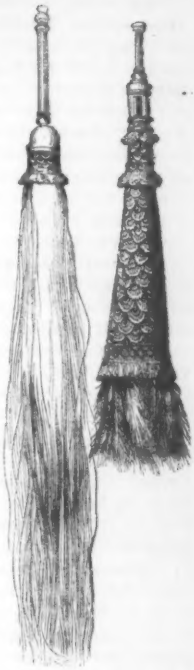
The cup-bearer having presented the cup to his lord, waved over his head the fly-whisk, to disperse the flies which in hot climates quickly accu-



Fly Whisks.

mulate around sweetened fluids and foods of all kinds, or to answer the same purpose as a fan with us.

This implement in its structure and use very closely resembled those that are used at this day in Oriental courts; and, like them, had some varieties of form. The most common consisted of a bundle of slender filaments, set in a handle, the extremity of which was frequently carved into the head of an animal. Others were made of delicate flexible feathers set in a similar handle.



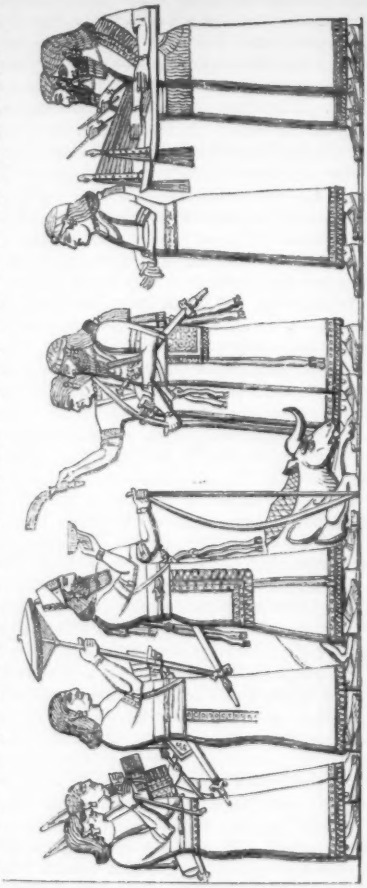
INDIAN CHOWRIE AND MOARCHAL.

Interesting specimens of this implement were exhibited in the Crystal Palace. The Indian Collection contained several *chowries*, as they are called, of the former construction, some made wholly of ivory, the filamentous part composed of thin narrow strips of that substance, others of sandal-wood, others of rosewood; but the most common are formed of the wiry nervures of palm-leaves. Some of great beauty called *moarchals*, intended more for state than use, consist of a large handle of a funnel-like form, made of gold or silver filagree-work, in which are set the decomposed feathers of the bird of Paradise; perhaps represented by the left-hand figure in the above engraving of Assyrian specimens.

When the king had satisfied his thirst, the cup-bearer presented to him the napkin, a cloth very narrow but of great length, richly embroidered and fringed at each end, which he bore, exactly as the analogous *elmár-hama* is borne in the present day, over the left shoulder, hanging down before and behind nearly to the ground. The functionary, it seems, having respectfully and gracefully delivered the cup to the monarch with his right hand, immediately transferred the fly-whisk from his left, in which he had hitherto carried it, to his right, and thus let the former hand free to take hold of the napkin with his fingers, and hold it out from his breast without removing it from his shoulder, that his royal master might wipe his mouth without intermitting the waving of the fly-whisk. The officer who held this important station was a eunuch.

Beside the cup-bearer stood a person evidently of high consideration, who, from the frequency with which he is represented in courtly scenes, and the circumstances in which he is seen, has been supposed to be the vizier, or chief adviser of the king, or what we should call his prime minister. The magnificence of his dress, second only to that of the sovereign himself, his carefully and elaborately arranged hair and beard, and the peculiar form of his diadem, indicate the high dignity of this functionary; yet he meekly stood in the presence of his master, with folded hands, in that attitude of calm, passive reverence, which to this day declares in eastern courts how truly the highest personages of the empire are the slaves of the autocrat.*

* This has often been illustrated: we take an example from Mr. Fraser's "History of Persia." "The Shah is, in fact, the government, the nation. All



KING MET BY HIS COURTIERS.

Below the vizier and the cup-bearer in rank, but following close behind them came another eunuch dressed in a long plain robe, slightly bordered and fringed (compared with those of the officers of whom we have spoken), wearing around his head a fillet of different form, inferior in splendour to that of the vizier, yet ornamented in front with a large button, which was probably a gem. He wore no arms; and in all probability held the responsible station of chief of the household, analogous to the modern Kilsar Aga, in the Ottoman Court, who superintends the seraglio of the royal palace. He received his returning lord, also, with folded hands, the palms crossed the one upon the other, in front of the breast.

After this officer came the minstrels, whose duty it was to welcome their master's return with the psaltery and harp, and probably to sing to the music of their instruments the praises of his valour, his majesty, or his clemency, in measures of their own composing. Two of these only are represented in the bas-relief, but possibly, as Mr. Bonomi has suggested, these may conventually represent a whole band. They were dressed in long robes, wore their hair and beards copious and elaborately dressed, and carried ten-stringed harps suspended in front of their breasts by a belt around the neck. These harps were of singular structure; apparently a

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are his servants, his slaves; to be raised into affluence and favour at his pleasure, to be degraded and destroyed at his caprice without remonstrance or appeal. 'There,' said Futeh Ali, one day to the British Envoy, in conversing on the difference between a king in England and in Persia,—'There stand Solyman Khan Kujur, and several more of the first chiefs of the empire; I can cut off all their heads if I please. Can I not?' said he addressing them. 'Assuredly, Kibleh Allum! (Point of the World's adoration!) if it is your pleasure.'—'Now that is real power,' said his majesty, turning to the Envoy."

narrow concave sounding-board formed the base, from the front of which rose at right angles a pillar terminating in an open human hand. The strings passed from the pillar to the sounding-board across the angle, and were tightened by pegs inserted at regular distances along the former; they were thus graduated in length. Yet as no support appears to have existed between the top of the pillar and the other end of the board, it is difficult to imagine how the instrument could be put into tune, for the tightening of the strings must soon have strained the pillar out of its socket, or broken it. It is remarkable that the same apparent defect existed in the harps of Ancient Egypt. Threads, perhaps of silk, hung down from the pegs to a considerable distance, and these terminated evenly in a bunch of tassels. These harps were carried under the left arm, the fingers of which hand were used to stop or twang the chords, which were struck with a plectrum carried in the right hand.

The custom of maintaining musicians in the king's court is repeatedly alluded to in Scripture. The employment of David to "play with his hand" in the palace of Saul, was indeed a requirement of that monarch's personal malady rather than of royal pomp. But in the retinue of the gorgeous Solomon we find them taking their place as regular retainers:

"I gathered me also silver and gold, and the peculiar treasure of kings and of the provinces: I gat me men singers and women singers, and the delights of the sons of men, as musical instruments, and that of all sorts." (Eccles. ii. 8.)

That music ordinarily formed a part of the routine of the Persian Court, is implied in what we are told of Darius, on the occasion of Daniel's being cast to the lions:—

"Then the king went to his palace, and passed the night fasting: neither were instruments of musick brought before him: and his sleep went from him." (Dan. vi. 18.)

These are all the officers and attendants that are represented in the bas-relief as welcoming the king back to his palace. There are, indeed, other personages represented, but they accompany the monarch, and return with him. These are the armour-bearers, the *silikdars* of modern times, whose office and appearance we shall have another occasion of considering in detail.

LETTING AND HIRING.

EVERY man ought to be at liberty to sell, let, or use in any way he likes best, his house, or land, or anything that is his property. There are some countries in the world, indeed, inhabited by half-savage tribes, such as the Tartars, where land is not private property, but is all one great common, on which every man turns out his cattle to feed. These people, of course, lead a wandering life, dwelling in tents, and removing from place to place, in search of fresh pasture; and the land, as you may suppose, is never cultivated, as no one would think of sowing seed, when another might reap the harvest.

There are other countries, again, where any man may keep possession of a piece of ground which he has ploughed and sown, till he has gathered in the crop; but as soon as ever it is out of his occupation, any one else is free to take possession of it. This is the case in many parts of Arabia at this day; and such seems to have been the state of many parts of the land

of Canaan while Abraham and Isaac dwelt there. (See Gen. xxvi. 12, and Acts vii. 5.)

But it is plain that, in such a state of things, it would not be worth any one's while to spend money in fencing, draining, and manuring the land; because he would know that if he were disabled by sickness from continuing to cultivate it, or if he died leaving young children, it would pass into other hands, and all he had spent would be lost to him.

In order, therefore, that the land should be properly cultivated, it must be private property; and if a piece of land is your property, you ought to be at liberty to dispose of it like any other property; either to sell it, or to cultivate it yourself, or to employ a bailiff and labourers to cultivate it for you, or to let it to a farmer.

When land is scarce in proportion to the number of people, in any country, the hire, or rent, as it is called, which the farmer pays for the use of it, will be the greater. The reason of this is very simple, and easy to be understood. The price of land, either to buy or to hire, increases, like the price of everything else, in proportion to the scarcity of it, compared with the number of those who want it, and can afford to pay for it. When horses are scarce, in proportion to those who want them, and can afford to pay for them, the price or the hire of a horse increases; and so it is with everything else, and with land among the rest. A farmer desires land, because he hopes to make a profit by raising corn and other crops from it; and he consents to pay rent for it, because he cannot obtain land without. And so it is with everything that we buy or hire. We consent to pay for it as much as we think it worth to us, when we desire to have it, and cannot obtain it without that payment. Land is desired, therefore, on account of the crops that may be raised from it; and rent is paid for it, because it cannot be had without rent. You may have land for nothing in the Arabian desert; but no one desires it there, because it will produce nothing. But, again, in many of the uncleared parts of America, land may be had for nothing, though the soil is good and will bear plentiful crops. But there the land is so abundant, and the people so few, that any one may have as much as he chooses to clear. In this country, therefore, land that will produce any crops is of value, because the supply of it is limited. In the wilds of America it is of no value; not because (like the Arabian deserts) it will produce nothing, but because, though it is very fertile, there is enough, and much more than enough, for every one who wants it. But even in the newly-settled parts of America the land becomes of some value, as soon as it is cleared of wood, and has roads made through or near it. And many persons are willing to buy, or to pay rent for, such land, even when they might have land for nothing in the depth of the forests. But then they would have to clear the ground of trees, and would be obliged to send, perhaps, some hundreds of miles to a market, to sell the corn, and to buy what they wanted.

But as land grows scarcer in proportion to the number of people, that is, as the people multiply, the owners of it find that they can obtain a higher and higher rent. This, as I have explained, is because everything that is useful becomes an article of value, that is, will fetch a price, when it is limited in quantity.

Some persons fancy that the reason why land fetches a rent, is because the food and other things produced by land afford the necessary support of man's life. But they do no not consider that air, which we do not pay for, is as necessary to life as food; and that no one would pay for anything

which he might have without payment. If good land were as abundant in this country, in proportion to the people, as it is in some of the wilds of America, every one might take as much as he pleased for nothing. It would produce corn and other necessaries, as it it does now: yet he would pay nothing but the labour of cultivation. Here, on the contrary, the only kind of land for which no one would pay rent is that which will produce nothing, and is of no use at all; like the shingles of the beach on many parts of the coast. However scarce land (or any other article) may be, no one will pay for that which is useless; and, however useful it may be, he will not pay for that which is so plentiful as to be had for nothing. As was explained before, the value of anything is not caused by its scarcity alone, or by its usefulness alone, but by both together.

Some, again, fancy that the rent is paid on account of the expense which the owner of the soil (or landlord as he is called) has laid out in enclosing the land, manuring it, and bringing it into cultivation. And some of our land certainly has in this way cost the landlord a great expense, which he would not have bestowed if he had not expected to be repaid by the rent. But it is not this expense that is the cause of the rent's being paid; for if he had laid out ever so much in trying to improve the land, still, if he did not bring it to produce the more, he would not obtain the higher rent. And, on the other hand, though your land may have cost you nothing, still, if it will produce anything, and there is not enough of it for everybody, you may always obtain a rent for it. There are pastures of great extent in some parts of this country, which have never had any expense laid out on them. But they naturally produce grass for sheep; and farmers accordingly pay rent for them.

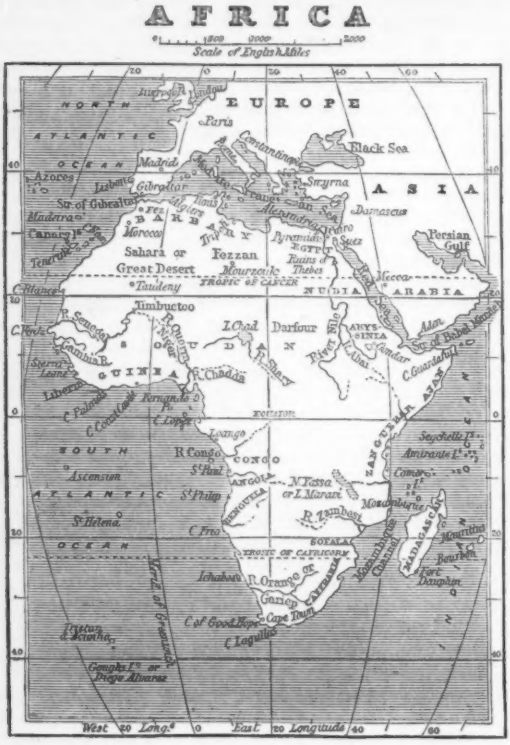
Again, there are on some parts of the coast rocks which are bare only at low water, and are covered by the sea at every tide. On these there grows naturally a kind of sea-weed called kali, or kelp, which is regularly cut and carried away to be dried and burned for the sake of the ashes used in making soap and glass. These rocks are let by the owners of them to those who make a trade of gathering this kelp for sale. Now, you see by this, that rent cannot depend on the land's producing food for man, or on the expenses laid out in bringing it into cultivation; for there is rent paid for these rocks, though they produce no food, and though they never have been or can be cultivated.

Sometimes, again, rent is paid for a piece of ground on account of its situation, even though nothing grows on it. A fisherman, for instance, may be glad to rent a piece of the sea-beach in a spot where it is convenient for him to draw up his boat, and spread his nets to dry, and build his cottage and storehouses.

THE NATIVES OF AFRICA.—A NARRATIVE.

Africa is the least-visited and least-known portion of the Old World; nor can we wonder, since there is much to deter the traveller from exploring this continent. The interior consists of vast sandy deserts, and ranges of lofty mountains. The heat of the tropical sun is intolerable to Europeans, and the climate throughout a large extent is pestilential and deadly. The inhabitants are fierce and inhospitable; the plains swarm with wild beasts, and the rivers with noxious insects. The map will show you that this continent is a solid mass, little intersected by bays, gulfs, or navigable rivers. The northern coast is rocky and iron-bound. Communication is

consequently difficult and dangerous, and few but the adventurous have dared to explore the interior. Of these a large proportion (amongst them Mungo Park, our countryman) have found untimely graves.



The description of the natives of Africa will exhibit in a *negative*, but convincing shape, the blessings of Christianity. You will find that where the Gospel is not received, as is unhappily the case throughout the chief part of Africa, the corruption of human nature appears in an appalling shape. Barbarous cruelties, treacheries, and impurities prevail among the Aborigines, and habits of discomfort and filth prove the absence of the civilization which characterises Christian nations. For, much as the precepts of the Saviour are disregarded in countries professedly Christian, still the golden rule of charity has softened and leavened their social life. Churches, schools, hospitals, asylums for the needy, and the arts of peace, have mitigated the natural ferocity of man, which in Africa still reigns unchecked and uncontrolled by religion.

The natives of Africa may be classed as follows:—

1. Egyptians.
2. Moors.
3. Negro nations.
4. Inhabitants of the Cape Colony, consisting of
   European settlers.
   Hottentots.
   Bushmen.
   Kaffirs.

1. Egypt differs entirely from all other parts of Africa. This may easily be accounted for. If you examine the map, you will perceive that before the passage round the "Cape of Good Hope" was discovered by the Portuguese, the Red Sea was the obvious channel for the traffic of the Indies with the Levant. The civilization of China and India followed the course of the river Nile, and Egypt was famous for architecture, astronomy, science, and art, at a time when our forefathers in Britain were mere savages, clothed in skins and worshipping idols.

We now revert to an early date in order to trace the origin of the "natives of Africa." The whole world was overspread by the descendants of Noah, and it is generally believed that the Asiatics are of the race of Shem, the Europeans of the family of Japhet; whilst Africa was peopled by the children of Ham, who was the Jupiter Ammon of mythology. The curse of Noah on this branch seems to have laid a blight on the African continent.

A question of interest arises in treating of the dark complexions of the Negro nations of Africa. God made of one blood all the families of the earth. Was then this change of colour a gradual process, or a sudden and miraculous adaptation? Some have thought that the tropical heat made each succeeding generation more and more sable; but it appears more probable that the Almighty adapted the descendants of Ham by a miracle to the torrid zone, where their lot was cast. Ancient Egyptian pictures, found in the catacombs, represent the Ethiopian as *black*, and Jeremiah inquires, "Can the Ethiopian change his skin?" We can trace in this, as in all dispensations of the Creator, both wisdom and goodness. The black skin enables the African not only to bear, but to *enjoy* a degree of heat, which would be intolerable to the white man. Little African children in the West Indian schools love to bask in a sunshine and glare, which drive those of European blood to seek shade and shelter. The black colour absorbs heat, and hence the Negro's skin is cool, while that of the Englishman would be parched and blistered. The woolly matted hair of the Negro is a further adaptation to the climate, since it protects the skull from the rays of the vertical sun. European hair, however long, affords no such protection, as it does not thicken on the top of the head. The love of finery, inherent in the Negro character, induces the Negro women to make laughable and torturing efforts to part their hair and curl it in ringlets after the European fashion.

The dark skin, which enables the African to bear the heat of his native climate, has led to cruel abuses through the evil dispositions of men. The aptitude of the Negro to labour under a tropical sun was the original cause of the "slave trade." It was found that white men could not cultivate the rice, sugar, cotton, and coffee in the plantations of America, and hence the importation of Negroes.

The complexion of the Egyptians, though swarthy, is very distinct

from the tyoe of the Negro, nor is the hair of the same woolly description.

Many of the customs of modern Egypt are scriptural. The harbour of Alexandria is unlike European seaports. Camels are employed to convey the merchandise, and the natives wear long flowing dresses of bright colours, as in the days of the Pharaohs. When the writer visited the country, the old Pasha, Mehemet Ali, was "governor over all the land of Egypt." The birth of this extraordinary man occurred in the same year in which the Duke of Wellington, Bonaparte, and other memorable persons were born. Like many other eastern monarchs, Mehemet Ali gained his throne by bloodshed. The Mamelukes were massacred in the citadel of Cairo: only one effected his escape by leaping his horse over a high wall. The following is a specimen of the despotic authority of the Egyptian Viceroy: Bogos Bey, an Armenian, was unable to procure a large sum of money which the Pasha required. Mehemet Ali ordered that he should be thrown into the Nile. A merchant of Cairo released him, and kept him hidden, until the Pasha expressed regret at having sacrificed so useful a minister. Bogos was reinstated, but the guards who surrendered him were put to death. The conscription is another exercise of tyranny which oppresses the Egyptians. The soldiers are taken from their homes by violence, and compelled to serve in the Pasha's armies at his good pleasure.

Egyptian mourners still express their grief by loud cries, as in the days of Pharaoh, when the first-born were slain. "Wailings for the dead" are frequently alluded to in the Holy Scriptures.

Christianity flourished in Egypt many centuries ago. St. Mark is said to have been the Bishop of Alexandria, and other men of note were pastors and teachers in the Egyptian churches and schools. Heresies, however, and corruptions crept in, and reduced this branch of the eastern Church to the state of degradation in which it now lies.

Upper Egypt was the birthplace of the monastic system. The first founders were devout men, who, disgusted with the vices of the heathen, retired to solitude, study, and prayer, and supported themselves by the labour of their hands. In after times this system became perverted, and at the present day the eastern convents and monasteries frequently bring discredit on the Christian religion by the feuds and jealousies of the rival communions. Mr. Curzon describes the Egyptian monks in his interesting work on the Levant. One brotherhood inhabits an almost inaccessible rock on the shores of the Nile. The only approach to the convent, which is called "the convent of the pulley," is by a cleft in the rocks, resembling a chimney, up which the monks climb. These precautions for security are necessary in the unsettled state of the country. The brethren appear to be almost amphibious; they swim out into the Nile to waylay the boats, and to entreat the charity of the passing traveller. Another brotherhood of Abyssinian monks offers a strange appearance, being black as Negroes, and dressed in cloaks and tunics of yellow leather.

The banks of the Nile, as far as the cataracts, abound with the ruins of heathen temples and tombs. The votive offerings of ancient idolaters put to shame the niggardly efforts of modern Christians. The pagan idols, Apis and Isis, received the tribute of a more generous liberality than men are disposed to offer to the one true God in the nineteenth century, when Mammon absorbs much that might be more wisely dedicated. It is of course admitted that the slave labour of the ancients made it more feasible to carry out great works, than it would be according to the modern scale of

payments. It is probable that some of the existing temples and pyramids were erected by the Israelites, and that the tale of bricks, exacted by their taskmasters, was employed in some of the buildings still extant.

The traffic of the Nile does not appear to have extended in ancient time much beyond the site of Thebes, the city of "a hundred gates." Thither the merchandise of the east was carried on dromedaries and camels from Kosseir, a port on the Red Sea. By this route the spices of India were imported to Europe. The navigation of the Nile is impeded on the borders of Nubia by several cataracts or waterfalls, beyond which two rivers form a junction, *i. e.*, the White Nile from the west, and the Blue Nile from the east.

A great work was undertaken on the banks of the Nile some thousands of years ago. The historian Herodotus mentions a Monolithic temple, *i. e.*, a temple formed out of *one* block of stone. This gigantic mass was quarried near the cataract, and was lowered upon a framework or raft. At the periodical inundation of the Nile, the waters floated this raft, and in the course of two seasons it reached Heliopolis, a distance of several hundred miles. When the waters abated, it was left high and dry at the destined site.

This incident leads me to remark upon the annual inundations, which are the cause of the fertility of Egypt. In that country, without irrigation nothing can grow. It becomes, therefore, a matter of vital importance, that the river should rise to a sufficient height to overflow the entire valley, and deposit the rich slime, in which the grain sown yields often a hundredfold.

At the usual season, when the rains in Abyssinia have swollen the current, it becomes the absorbing interest of the Egyptians to watch its rise. A pillar, called the Nilometer, marks the height of the flood, and the natives are fully aware that their sustenance for the coming year depends upon the inundation, since rain is almost unknown in Egypt, a fact alluded to by the prophet Zechariah (xiv. 18). When the flood is at its height, Egypt is one vast sea: the high grounds on which the villages are built become islands, and communication is stopped except by boats. This is the season for mirth and amusement among the people. At Grand Cairo great festivities mark the opening of the canal. A band of Arab labourers are engaged in cutting down the dam which separates the canal from the river. The viceroy and his attendants survey from a magnificent tent the proceedings. When the dam begins to give way, the excitement becomes intense. The workmen redouble their efforts at no small peril of their lives. Showers of coins are thrown at them, and they are encouraged by the shouts of the people. At length the embankment is undermined, and the waters pour furiously into the dusty basin, which in a few weeks is covered with a luxuriant harvest.

As the river subsides, the labours of the husbandman begin. So soon as a narrow strip of the plain is left dry, grain is sown. The manner of sowing is scriptural: the peasant scatters the seed in the soft mud and covers it with his foot. As the waters abate, another patch is cultivated, and it often happens, that by the time the bank of the river is sown, the higher portion is ready for the sickle. As the inundation occurs once only in the year, the subsequent crops require irrigation, which is carried on systematically.

In ancient times the trade of India passed down the Nile to the Levant. The discovery of the passage round the Cape drew away this lucrative commerce from Egypt during several centuries. By a strange vicissitude the

old route has become once more the thoroughfare to the Indies. The "overland journey" (as it is termed) has brought India within a six-weeks' journey. The desert of Suez is alive with English travellers, and the correspondence of our Asiatic provinces is carried up the Nile and across the Isthmus to the Red Sea.

(*To be continued.*)

HUMAN LEARNING NECESSARY.

2 SAM. xii. 31.—David is said to have put the Ammonites under saws and under harrows of iron, &c., which gives the impression of great cruelty on his part. Were there no answer to this, we must not shrink from charging him with whatever guilt might properly attach to the act, the Bible itself furnishing the principle by which to do so. But the original Hebrew admits of its being rendered instead of "under" "to" saws, &c., which implies nothing more than employing them as slaves in the most mean and laborious offices. The word translated "harrows of iron" may also be rendered "iron mines." It is indeed said that David cut them with saws; but seven of the Hebrew manuscripts collated by Dr. Kennicott have the word which means, "he put them to saws."

This illustration has been given to show the value of a knowledge of the learned languages, and of those diligent researches which learned men have made to throw light on Scripture. "Pertness and ignorance," as Bishop Horne remarks, "may ask a question in three lines, which it may cost thirty pages to answer." But thus has God sanctified the use of learning, and would teach the unlearned to respect it. "Some things in the Scriptures are hard, I deny it not," says Bishop Jewel: "it is very expedient that somewhat should be covered, to make us more diligent in reading, more desirous to understand, more fervent in prayer, more willing to ask the judgment of others, and to presume less on our own judgment." Mystery is only another name for our ignorance: "and those passages," as Boyle says, "which teach us nothing else, may at least teach us humility." We may also be assured, that while "the wicked shall not understand," and "the scorner seeketh wisdom and findeth it not," "the meek will he teach his way," "the meek will he beautify with salvation."

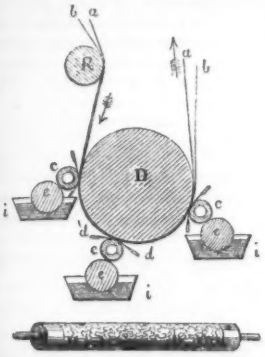
THE USEFUL ARTS AND MANUFACTURES OF GREAT BRITAIN.

CALICO PRINTING (*continued*).

CYLINDER OR ROLLER PRINTING.

THE greatest mechanical improvement in this art was the invention of *cylinder* or *roller* printing, said to have been first made by one Oberkampf, a calico printer at Jouy in France. The invention was also made, independently of him, by a Scotchman named Bell, and was practised about the year 1785 at Monsey, near Preston. This style of printing has been cultivated with the greatest success in Lancashire, and is the chief cause of our superiority in this art over the continental printers, who are but little acquainted with cylinder printing. By this style, not only is the work more accurately performed than with the wooden block, but the saving of time and labour is truly remarkable. One cylinder machine, attended by one man to regulate the rollers, is capable of printing as many pieces as one hundred men and one hundred girls could print with hand blocks in the same time; or, in other words, as much work may be executed by a cylinder machine in four minutes, as by the ordinary method of block printing in six hours. A length of calico equal to one mile can be printed off with four different colours in a single hour.

The means by which these extraordinary results are attained are sufficiently simple. The accompanying section shows the arrangement of the machine for printing a pattern upon calico in three colours: (*e*) is an engraved cylinder or roller, (also shown in a separate figure,) mounted



on a strong framework, so as to revolve against two other cylinders (*D*) and (*e*): the cylinder (*e*) is covered with woollen cloth, and dips into a trough (*i*), containing the colouring matter properly thickened. When this roller is made to revolve, it takes up a coating of the colour, and distributes it over the engraved roller (*c*). (*D*) is a large iron drum, the surface of which is rendered elastic by several folds of woollen cloth. Round this drum travels an endless web of blanketing (*a*) (*a*), in the direction of the arrows, accompanied also by the calico (*b*) (*b*), which moves between it and the engraved cylinders. The pressure of the cylinders against each other is regulated, as occasion may require, by screws or levers.

As the cylinder (*e*) spreads the colour uniformly over the engraved cylinder (*c*), and it is wanted only in those depressed parts which form the pattern, it is obvious that the excess of colour must be removed, by some means, before the engraving comes in contact with the calico. This is accomplished by scraping the surface of the cylinder, as it revolves, with a sharp-edged knife or plate, usually of steel, called the *doctor* (*d*). This odd name has been accounted for in the following way:—When Mr. Hargreaves, a partner in the factory of Monsey, near Preston (already alluded to as the place where cylinder printing was first introduced), was making some experiments with the process, one of his workmen who stood by said, "All this is very well, sir; but how will you remove the superfluous colour from the surface of the cylinder?" Mr. Hargreaves took up a common knife, which was near, and placing it horizontally against the revolving cylinder, at once showed its action in removing the colour; asking the operative, "What do you say to this?" After a moment's pause of surprise and pleasure, the man replied, "Oh, sir, you have *doctored* it!" a common phrase for "You have *cured* it;" and the contrivance has ever since retained the name of *doctor*.

The doctor is so managed that the colour scraped off shall fall back into the trough (*i*). There are usually two doctors to each engraved cylinder; one called the *colour doctor*, and the other the *lint doctor* (*d*). The office of the latter is to remove the fibres which the roller acquires from the calico. Some colouring materials and mordants, such as those containing salts of copper, exert a corrosive action upon steel doctors: gun-metal, bronze, brass and iron alloys are therefore used instead of steel.

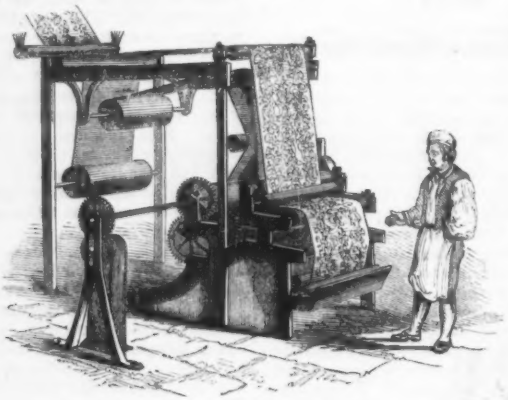
Some idea may be formed of the appearance of the cylinder machine from the sketch on the next page.

As many as eight colours may be applied at the same time, by having as many engraved rollers, each with its accompanying colour-trough, &c., revolving against the iron drum (*D*). The greatest nicety of arrangement is required to bring all these rollers to print the cloth at the precise spots required, but when once properly adjusted, each may be made to deposit its colour on the calico with certainty and regularity.

When the calico is printed, it is dried by being drawn through a long gallery or passage, which is commonly heated by the flue of a furnace which extends the whole length of the floor of the gallery. The upper surface of the gallery is covered with rough-cast iron plates, which become quickly heated, and present a good radiating

surface. A piece of calico, of twenty-eight yards, is usually drawn through the gallery in about two minutes.

The length of the printing roller may vary, according to the breadth of the calico to be printed, from thirty to forty inches; its diameter may be from four to six inches, or even a foot. Each roller is bored, and accurately turned, from a solid piece of metal. For some peculiar styles of pattern, the engraving is done by hand, but, as this is a costly operation, it is usual to adopt Mr. Perkins' method for transferring engravings from one surface to another by means of steel roller dies. The pattern is first drawn upon a scale of about three inches square, so that this size of figure being repeated a definite number of times, will cover the cylinder. This pattern is next engraved upon a roller of soft steel, about one inch in diameter, and three inches long, so as to occupy its surface exactly. This roller, which is called the *die*, is next hardened by being brought to a red heat and then plunged into cold water. This hardened roller is then put into a rotatory press, and made to transfer its design to a similar roller, in a soft state, called the *mill*. As the design is sunk in the die, it appears in relief on the surface of the mill. This mill, being hardened, is put into a rotatory press, and is made to engrave or indent upon the large copper cylinder the whole of the intended pattern. By this process, the cost of an engraved cylinder may not be more than about 7*l*., but if engraved by hand it would cost upwards of 50*l*. By the same method, a worn-out cylinder can be easily restored, by rolling the mill over the copper surface.



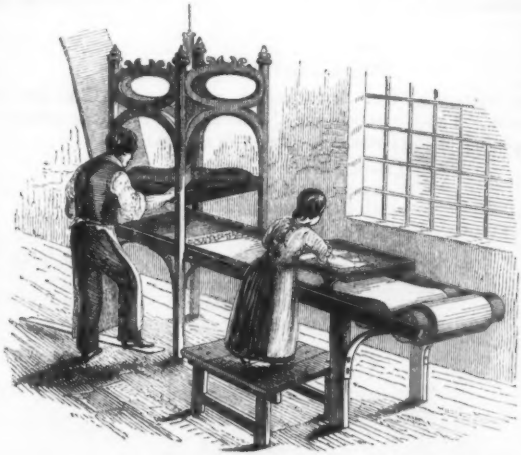
Cylinder Printing.

The pattern is also sometimes produced on the cylinder by *etching*. The cylinder is covered with a thin coat of varnish, and on this the pattern is drawn, with a diamond-pointed tracer. The cylinder is then immersed in dilute nitric acid, which corrodes or engraves all the parts from which the varnish has been removed by the tracer. The tracer is generally applied by a process similar to the eccentric chuck of a lathe, and thus the entire surface is covered with patterns, or groundworks of patterns, of infinite varieties of form, and some exceedingly beautiful. Cylinders, eccentrically engraved, are largely exported from Manchester, both to the Continent and to North America; and the foreign printer adds the pattern, either by hand or with the steel cylinder. The Germans send their own designs to be engraved on the cylinders, having previously selected the groundwork. The value of a copper roller, before it is engraved, is about 5*l*. or 7*l*.: the value of engraving varies from 5*l*. to 10*l*.

There are other methods of producing the design upon the printing cylinder, among which may be mentioned the electrotype. The design is also sometimes cut in relief upon wooden rollers: or formed by the insertion, edgeways, of flat pieces of copper wire. This is *surface printing*, which Dr. Ure thinks was probably so called because the thickened colour is applied to a tense *surface* of woollen cloth, from which the roller takes it up by revolving in contact with the cloth. When these wooden rollers are combined with copper ones, the machine is called the *union* printing machine.

PRESS PRINTING.

The last method of calico printing is *press printing*, which is a refined improvement on block printing. By



PRESS PRINTING.

this style, several different colours can be executed at one impression. The cloth to be printed is wound upon a roller at one end of the printing table. The block containing the design, which is cast in mixed metal, is about 2½ feet square, and is supported, with its face downwards, in an iron frame, so as to be raised or lowered at pleasure. The face of the block is divided into as many stripes, crossways with the table, as there are colours to be printed. Now, supposing the pattern to be made up of five stripes, of different colours, each stripe six inches in breadth, and as long as the breadth of the cloth, the question is, how are the colours to be applied without mingling and disturbing each other?

Near one end of the table is a shallow tray or frame, resting upon wheels, so as to be easily moved backwards and forwards along a railway. This frame contains a cushion, of about the same size as the face of the printing block, and by the side of the cushion are, arranged in a line, five little troughs, containing the thickened colours. By means of a long piece of wood, so formed as to dip into all the troughs at once, the tearer applies a small quantity of each of the five colours to the surface of the cushion, and then spreads them evenly into five stripes, by means of a brush, without any intermixture. The breadth of these stripes is the same as the breadth of the stereotype rows on the block.

The cushion being thus charged, the frame is moved along the railway until it comes immediately below the printing block which is then lowered

by the pressman upon the cushion, by which means each of the five stripes on the block is charged with its proper colour. The block is then raised, the colour frame withdrawn, and the block allowed to descend upon the cloth, which it imprints with five rows of different colours. When the block is raised, the cloth is drawn forward, in the direction of its length, about six inches, or exactly the width of one stripe on the block: the tearer again pushes forward the cushion with more colour, and the block is again charged and applied to the cloth. As a length of the cloth equal to the width of a stripe is drawn from underneath the block at each impression, every part of the cloth is brought into contact with all the stripes on the block. The action of this machine is very beautiful; but the utmost nicety is required in adjusting all the moving parts of the press, to prevent the colours from mingling and distorting the pattern.

THE GREAT EXHIBITION.

It is an interesting fact that Chaucer, who wrote in 1380, has described in his poem, 'The House of Fame,' what appears to offer a curious parallel to the opening of the Crystal Palace in May 1851:—

"As I slept I dream't I was
Within a *temple made of glass*,
In which there were more images
Of *gold*, standing in sundry stages,
In more rich tabernacles
And with jewels more pinacles,
And more curious portraitures
And quaint manner of figures
Of gold work than I ever saw.

* * * * *

Then saw I stand on either side
Straight down to the doors wide
From the dais many a pillar
Of metal that shone out full clear.

* * * * *

Ther gan I look about and see
That there came ent'ring in the hall,
A right great company withal
And that of sundry regions
Of all kinds of conditions
That dwell in earth beneath the moon,
Poor and rich; and all so soon
As they were come into the hall,
They gan on knees down to fall
Before this same noble queen.
'Madame,' said they, 'we be
Folk that here do beseech thee
That thou grant us now good fame,
And let our works have a good name,
In full recompensation
Of good work give us good renown!'
Such a great congregation
Of folk as I saw roam about,
Some within and some without,
Was never seen, nor shall be no more!"

CHAUCER.